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Relation between different blood pressure measurements and left ventricular hypertrophy in peritoneal dialysis patients

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Objectives : Hypertension is prevalent in end stage renal disease (ESRD) and is associated with left ventricular hypertrophy (LVH), which is an independent predictor of cardiovascular mortality. Although hypertension is an important and modifiable risk factor for cardiovascular events, the optimal approach to monitor blood pressure (BP) in peritoneal dialysis (PD) patients for therapeutic guidance is unclear. In this study, we compared different methods of BP measurement and evaluated the relationship between different BP measurements and LVH in PD patients.

Methods : Fifty two prevalent PD patients were enrolled at a single dialysis center. We measured ambulatory BP, office BP, home BP, and central BP. The ambulatory BP was recorded for 24 hours, office BP was measured at least in two visits, and home BP was measured for one week. The central BP was estimated using radial artery tonometry. Left ventricular mass index (LVMI) was measured using transthoracic echocardiography and the presence of LVH was ascertained.

Results : LVH was best predicted by ambulatory systolic BP (area under the curve (AUC), 0.811; 95% CI, 0.691–0.931) and home systolic BP (AUC, 0.786; 95% CI, 0.658–0.915). The office systolic BP (AUC, 0.643; 95% CI, 0.488–0.799) and central systolic BP (AUC, 0.662; 95% CI, 0.514–0.840) were inferior to ambulatory and home BP in predicting LVH. The adjusted OR for home systolic BP (OR, 1.066; 95% CI 1.018–1.117) was higher than those for ambulatory (OR, 1.052; 95% CI 1.010–1.096) and central systolic BP (OR, 1.032; 95% CI 1.021–1.173) in LVH prediction. The office systolic BP did not significantly predict LVH (OR, 1.026; 95% CI 0.986–1.068).

Conclusions : Home and ambulatory systolic BP were the strongest predictors of LVH suggesting that treatments targeting these BP measurements may prevent end organ damage in PD patients.

Keywords : Blood pressure measurement, Left ventricular hypertrophy, Peritoneal dialysis